12/2/16

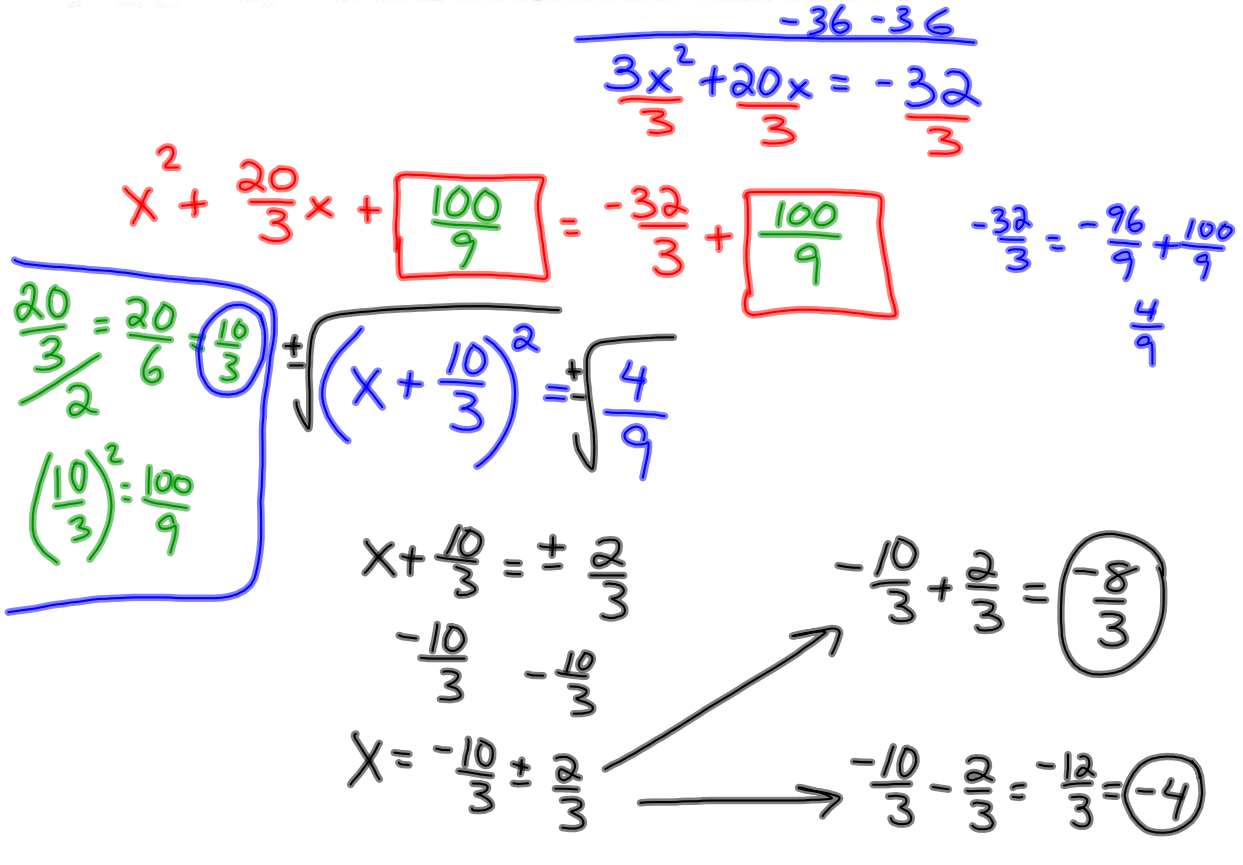
"Our greatest weakness lies in giving up. The most certain way to succeed is always to try just one more time." -Thomas Edison

HW: Worksheet "Solving Rational Inequalities" #3, 5, 7, 9*

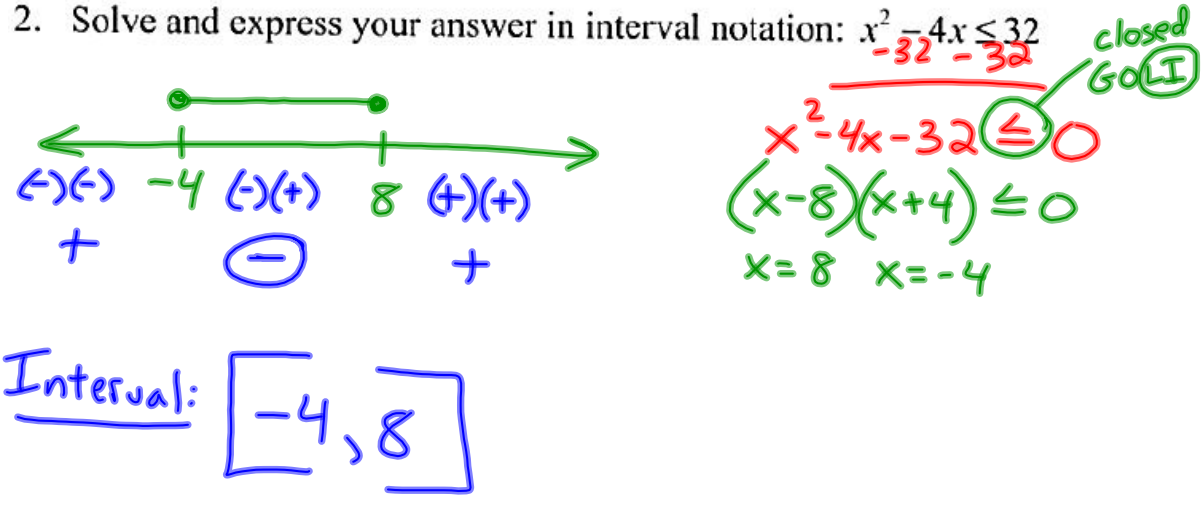
AIM: How do we solve Rational Inequalities?

Warm Up:

1. Solve by completing the square: $3x^2+20x+36=4$



2. Solve and express your answer in interval notation: $x^2-4x\leq 32$



Guidelines for solving Rational inequalities:

- Move all terms to one side of the inequality. (If dealing with rational expressions, get a common denominator.)
- Factor completely.
- Set each factor equal to zero. These numbers will divide your number line. (Any denominator critical value has an open circle)
- Make a sign chart by dividing the number line into intervals found in step 3.
- Use a test value to determine the sign in each interval.
- Determine the solution of the inequality by examining the sign values.

For each inequality below, express its solution set 3 ways:

(a) As a number line.

(b) Using set-builder notation.

(c) Using interval notation.

1) $\frac{x+4}{2-x} \geq 0$

positives

$x+4=0$

$-4 \quad -4$

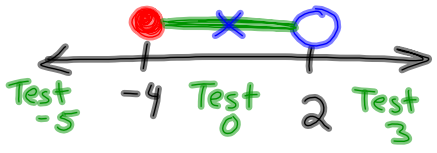
$x=-4$

$2-x=0$

$+x \quad +x$

$2=x$

critical values



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− + −

SB: $\{x \mid -4 \leq x < 2\}$

Int: $[-4, 2)$

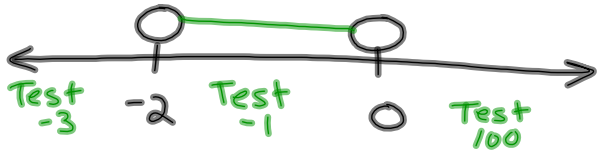
2) $\frac{x}{x+2} < 0$

negatives

$x=0$ open

$x+2=0$

$x=-2$ open



(−) (−) (+) (−) (+) (+)

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SB: $\{x \mid -2 < x < 0\}$

Int: $(-2, 0)$

3) $\frac{6}{x-3} > 0$

6) $\frac{(6-x)(3+x)}{x+1} \leq 0$